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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/582,558	06/29/2000	HIROAKI SUDO	JEL-31206	2761

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EXAMINER

ODOM, CURTIS B

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/582,558

Applicant(s)

SUDO ET AL.

Examiner

Curtis B. Odom

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings (Fig. 2) are objected to under 37 CFR 1.83(a) because they fail to show in the second bit, "0" and "1" and switched every 90 degrees on the I-Q plane and in the third bit "0" and "1" are switched round every 45 degrees on the I-Q plane as described in the specification (pg. 5, lines 15-20). Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because "1st and 2nd" are suggested to be changed to "first and second". Correction is required. See MPEP § 608.01(b).
4. The disclosure is objected to because of the following informalities:

Art Unit: 2634

a. Throughout the specification, "1st, 2nd, and 3rd" are suggested to be changed to "first, second, and third."

b. On page 6, line 23, the heading, "DISCLOSURE OF THE INVENTION" is suggested to be changed to "SUMMARY OF THE INVENTION".

c. On page 1, line 22-23 and page 6, line 26, the phrase "information normal communication" is suggested to be changed to "information during normal communication".
Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 13 and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 recites the limitation "wherein said modulation section, upon performing said modulation, places a bit constituting the important information as one or both of a first bit and a second bit of a symbol of the transmission signal." However, with regards to the specification, particularly page 9, lines 13-17, it is the understanding of the examiner that the S/P converter, or input section (not

Art Unit: 2634

modulation section or mapping circuits) recited in claim 1, is the actual section which places a bit constituting important information as one or both of a first bit and a second bit.

3. Claim 18 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 18 recites the limitation "wherein step (b), upon the modulation, places a bit constituting the important information as one or both of a first bit and a second bit of a symbol of the transmission signal." However, with regards to the specification, particularly page 9, lines 13-17, it is the understanding of the examiner that the S/P converter, or input section (not modulation section or mapping circuits) recited in claim 1, is the actual section which places a bit constituting important information as one or both of a first bit and a second bit. Therefore, placing a bit constituting important information as one or both of a first bit and a second bit is done during the inputting step, not during the modulation step.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bussgang et al. (U.S. Patent No. 3, 909, 721).

Regarding claim 14, Bussgang et al. discloses a reception apparatus comprising:

an extraction section (Fig. 10, block 70, column 11, lines 43-45) that extracts important information from one or both of a first bit (column 4, lines 6-14 and column 8, lines 18-41) and a second bit of a reception signal modulated according to a modulation scheme in which one symbol is expressed using three or more bits (column 6, lines 5-38 and column 8, lines 18-54) ;

an output section (Fig. 5, block 61 and Fig. 10, block 72, column 11, lines 45-53) that outputs the important information (bit X_{01}) extracted by the extraction section and other reception data through respective routes; and

a communication control section (Fig. 10, block 73 and Fig. 11, column 12, lines 1-61) that performs a communication control (error correction) based on the important information (bit X_{01} transformed to bit X_{0k}) output from the output section.

Bussgang et al. does not disclose a modulation scheme in which one symbol is expressed using three or more bits on an orthogonal coordinate comprising an in-phase component and a quadrature component. However, Bussgang et al. does disclose a phase modulator (column 4, line 15-column 5, line 23) using a modulation scheme in which one symbol is expressed using three or more bits.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that this phase modulator could have implemented phase modulation schemes such as PSK in which one symbol is expressed using three or more bits on an orthogonal coordinate comprising an in-phase component and a quadrature component. The

Art Unit: 2634

PSK scheme would perform the modulation on the signal in the same manner as the phase modulator and prepare the signal for transmission. Thus, using a modulation scheme in which one symbol is expressed using three or more bits on an orthogonal coordinate comprising an in-phase component and a quadrature component is deemed a design choice and does not constitute patentability.

Regarding claim 16, which inherits the limitations of claim 14, Bussgang et al. discloses the communication control section comprises a reception control section that, based on important information (bit X_{01} transformed to bit X_{0k}), performs a reception control (error correction) of the reception signal (Fig. 10, block 73 and Fig. 11, column 12, lines 1-61).

9. Claims 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bussgang et al. (U.S. Patent No. 3, 909, 721) in view of Riddle, Jr. (U.S. Patent No. 4, 389, 636).

Regarding claim 15, which inherits the limitations of claim 14, Bussgang et al. discloses all the limitation of claim 15 (see rejection of claim 14), except a retransmission instructing section that, based on important information, instructs a transmission end of communication to perform retransmission.

Riddle, Jr. teaches that when information is lost due to noise, a receiver can request retransmission of erased data (column 6, lines 30-38). Riddle, Jr. also discloses this technique is well known. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the device of Bussgang et al. with the teachings of Riddle, Jr. to increase the accuracy at which the data is received at the device.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gerson et al. (U.S. Patent No. 5, 642, 368) discloses the best recovered BER are generated at bits near a first transmitted bit.

Calvignac et al. (RE. 34, 869) discloses first bits used for control information in a transmitted signal.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 703-305-4097. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/582,558

Page 8

Art Unit: 2634

Curtis Odom
February 10, 2004

A handwritten signature in black ink, appearing to read 'Stephen Chin', with a long horizontal flourish extending to the right.

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600